Addendum 1: Economic Effect of CIRM Facilities and Equipment Grants on Tax Revenues and Jobs (September 10, 2008)

Addendum Objective

CIRM has now finalized the approval of the Major Facilities and Research Equipment Grants and Shared Research Lab Grants and has approval pending for Bank & Cores Grants.[1] These grants are intended to fund facilities-related costs. CIRM has also approved grants to fund research-related costs. In total, CIRM has approved 229 grants for over $614 million. Figure 12 shows the division between CIRM's equipment-related and research-related grants approved to date.[2] Since the Bank & Cores Grant program is pending final approvals, it is not included in the figure.

Figure 12: CIRM Grants Approved to Date

	Grants Approved to Date	
Grant Initiative	**Count**	**Amount (in $million)**
Total Facilities and Equipment-Related		
1. Major Facilities and Research Equipment Grants [F]	12	$271.0
2. Shared Research Laboratory Grants [D]	17	14.1
Total Facilities and Equipment-Related	**29**	**285.1**
Research-Related		
3. Shared Research Laboratory Grants [D]	17	36.4
4. Comprehensive Research ("Comp") Grants [C]	28	72.0
5. Training Grants [A]	16	37.5
6. New Faculty Award Grants [I]	22	54.4
7. Scientific Excellence through Exploration and Development ("SEED") Grants [B]	73	45.3
8. Disease Team Planning Awards [G]	22	1.1
9. New Cell Lines Awards [H]	16	23.2
10. New Faculty Award Grants II	23	59.0
Total Research-Related Grants	**217**	**329.0**
Total Grant	229	614.1

[1] "California Stem Cell Agency, Donors and 12 California Institutions Commit $1.1 Billion to Increase the Capacity for Stem Cell Research in California", CIRM press release dated 5/7/2008.

[2] For a list of sources, please see Figure 1 in Report. CIRM awarded a total of 17 Shared Lab Grants, which were distributed between facilities-related and costs and research-related costs, as given in Figure 12.

CIRM grantees independently raised additional funds for capital costs and new faculty lab research costs through other donor and institutional matching funds. We have been asked to evaluate the estimated economic impact on the California State Budget of CIRM facilities-related grant spending, as well as the donor and institutional matching funds for both facilities and research-related costs associated with these grants. We have also been asked to compare these results to our original estimates made in our 2003 and 2004 reports. Our 2003 report is titled *Analysis of the Financial Impact on the California State Budget of the Proposed California Institute of Regenerative Medicine* and our 2004 report is titled *Economic Impact Analysis, Proposition 71 California Stem Cell Research and Cures Initiative*. In this addendum, the reports are referred to together as the "original analyses". We have also been asked to estimate the number of additional jobs that would be generated by the facilities construction spending of CIRM and additional donor and matching funds for both facilities and research-related spending. This addendum does not include calculations on the effects of CIRM's research-related grant spending.

When considering the economic impact of CIRM's grants and other donor and institutional matching funds on the California State Budget, one should keep in mind that tax revenue is generated not only by CIRM's and the grantee institutions' direct expenditures, but also by the ripple effect of these expenditures. As a result of the CIRM-related spending, other businesses and institutions hire additional employees and increase spending on goods and services. For instance, the construction of new facilities by California institutions leads to additional in-state spending on food, rent, and other goods and services by the construction workers and suppliers.

Summary of Estimated Tax Revenue

In this analysis, we estimate the economic effect of the activities generated by CIRM's funding for construction of new research facilities and equipment from the Major New Facilities Grants and the Shared Lab Grants as described above in section 2, as well as the Bank & Core Grants, which are yet to be approved.[3] We also estimate the impact of the grantee institutions' activities generated by matching funds they have raised or have committed to raise in addition to CIRM's grants, to fund both direct facilities costs as well as the initial funding for new faculty lab research.

As of December 2007, CIRM budgeted $276.1 million for facility construction project grants (see Figure 13 below). The recent information from CIRM shows a somewhat increased spending level, to $320 million,

[3] Spending by Donors and Institutions for Bank and Cores grants will not be known until the grants have been received and approved. The minimum matching contribution from donors and institutions is expected to be 20 percent of the CIRM total. Based on other facilities funding to date we anticipate that the actual leverage percent may well exceed 20 percent.

including equipment spending.[4] This includes $285 million in approved spending and $35 million in pending, but not yet finally approved, spending for Bank & Cores grants. Additionally, the grantee institutions have committed another $900.7 million through other donor or institutional matching funds. Of these funds, $722.1 million is earmarked for facilities and equipment costs and $178.6 million for new faculty initial lab research spending. Based on the same economic impact framework described in the original analyses, we estimate the additional economic activity generated by these grants and the impact on the State Budget, and compare the results to the estimates in our original analyses. Assumptions and estimates from the original analyses were updated where new information was available, such as the current construction industry wage and spending estimates.[5] Certain significant assumptions from the original analyses, such as the economic activity multiplier of 1.80 for construction of facilities and 1.93 for research spending, remain unchanged.[6] The results of our analysis are presented in Figure 13 below and discussed in the following paragraphs.

The $320 million of CIRM facilities grants—which is 13 percent more than originally estimated ($282.0 million in the original analyses)—along with $900.7 million in donor and institutional matching funds for facilities and new lab research funds, are estimated to result in $99.1 million of tax revenue for the State of California over the next five years, which is 277 percent more than our original estimate of $26.3 million over five years. Of this revenue, $85.7 million is estimated to result from facilities and equipment spending, and $13.3 million is expected to result from spending on new faculty lab research facilities.

Tax revenue to California from these new lab facilities funds is based on our understanding that the facilities-related funds and the new faculty lab research funding come entirely from new funding sources that would not otherwise have been used for alternative projects during the same time period. Thus in this analysis, as in our original analyses, we assumed no offset for the economic benefits of new facility construction. In our original report, we assumed the CIRM research funding economic impact would have some offset due to researchers using some CIRM funding as a substitute for other research funding, rather than CIRM representing entirely new additional funding. This reduced the estimate of economic benefits of this funding on net new jobs and tax revenues. The research funding we consider here is different from ongoing CIRM research funds, since it represents the commitment of the institutions for

[4] The $43.9 million spending level increase comes from, the Major Facilities Grant for Type II Equipment. See "CIRM Review Panel Makes Recommendations for Distribution of $262 Million to Build Research Facilities in California", April 5, 2008.

[5] Sources for the updated information include: disbursement and matching funds data from CIRM; "2002 Economic Census, Construction, Subject Series" - report published by the U.S. Census Bureau Report in October 2005; "Who Pays Taxes in California?" - article published by the California Budget Project in April 2008 citing data from the Institute on Taxation and Economic Policy; California State Board of Equalization information on sales tax rates as of April 2008; Q1 2008 prevailing wage data from the California Department of Industrial Relations; and 1998-2007 Consumer Price Index ("CPI') data from the Bureau of Labor Statistics.

[6] Economic activity multiplier refers to a parameter used to quantify the indirect impact of the original CIRM funding.

initial research funding associated specifically with the new facilities. Our understanding is that this is less likely to have direct alternative uses than ongoing CIRM research funding, and thus we have not included any offsets in our primary estimate. If we were to make an assumption that there would be some offset, similar to that assumed in the original work for CIRM funding, it would decrease the portion of tax revenue and job years associated with the initial research funding in California by approximately 50 percent, or $6.6 million.

The increase of 277 percent in the tax revenue estimate is primarily attributable to a noteworthy increase in the matching funds from institutions and other donors over our original estimates. In our original analyses' base case scenario, we estimated that matching funds would be 15 percent,[7] or $42 million, while in reality CIRM was able to attract commitments for facility and research-related matching funds of $901 million, or 281 percent of CIRM committed funds.[8]

[7] The original analyses modeled three scenarios: low case, base case, and high case scenarios with matching funds of 10 percent, 15 percent, and 20 percent, respectively.

[8] As noted in our original analyses, measuring what percent of matching funds would have been donated for the construction of research facilities without CIRM's participation is a more complicated analysis which we have not been asked to perform at this time.

Figure 13: Comparison of Original 2003 Study to Current Planned Spending
CIRM Facilities & Equipment Grants and Facilities and Related Funding from Other Sources

	5 Year Totals ($ Millions)			
	Original 2003/2004 Study	Current (2007 - 2011)	Increase (Decrease) vs. Original Study	Percent Increase (Decrease) vs. Original Study
I. FACILITIES AND EQUIPMENT SPENDING				
Spending by CIRM				
Currently Approved Funds				
Major Facilities Grant - Facilities Only Portion		$227.0		
Shared Labs Grant - Facilities Only Portion		14.1		
Total Currently Approved Funds		241.1		
Funds Pending Future Approval				
Bank & Cores Grant		35.0		
TOTAL CIRM FUNDS - FACILITIES ONLY		276.1		
Equipment Funds Associated with Facilities and Approved				
Major Facilities Grant - Type II Equipment		43.9		
TOTAL CIRM FUNDS - FACILITIES AND EQUIPMENT	**$282.0**	**$320.0**	**$38.0**	**13%**
Spending by Donor and Institutional Matching Funds				
Major Facilities Grant		$560.8		
Shared Labs Grant - Facilities Only		4.3		
Bank & Cores Grant		7.0		
Other Capital Costs associated with Spending on New Faculty Lab Research		150.0		
TOTAL MATCHING FUNDS - FACILITIES AND EQUIPMENT	**$42.3**	**$722.1**	**$679.8**	**1607%**
II. LAB RESEARCH SPENDING ASSOCIATED WITH NEW FACILITIES				
Spending by Donor and Institutional Matching Funds				
Additional Spending on New Faculty Lab Research		**$178.6**		
I. FACILITIES AND EQUIPMENT				
Total Spending	**$324.3**	**$1,042.1**	**$717.8**	**221%**
Donor and Institutional Matching Funds as a Percent of CIRM Spending	**15%**	**226%**		
Tax Revenue to California	**$26.3**	**$85.7**	**$59.4**	**226%**
Job Years Created By Total Spending Over 5 Years	**4,054**	**11,393**	**7,339**	**181%**
II. LAB RESEARCH SPENDING ASSOCIATED WITH NEW FACILITIES				
Total Spending	**n/a**	**$178.6**		
Tax Revenue to California	**n/a**	**$13.3**		
Job Years Created By Total Spending Over 5 Years	**n/a**	**2,334**		
III. COMBINED FACILITIES AND EQUIPMENT SPENDING AND LAB RESEARCH SPENDING ASSOCIATED WITH NEW FACILITIES				
Total CIRM and Matching Funds Spending	**$324.3**	**$1,220.7**	**$896.4**	**276%**
Donor and Institutional Matching Funds	**$42.3**	**$900.7**	**$858.4**	**2029%**
Donor and Institutional Matching Funds as a Percent of CIRM Spending	**15%**	**281%**		
Tax Revenue to California	**$26.3**	**$99.1**	**$72.8**	**277%**
Job Years Created By Total Spending Over 5 Years	**4,054**	**13,727**	**9,673**	**239%**

Summary of Estimated Job Creation

Spending by CIRM is expected to result not only in incremental tax revenue for California but also in the creation of new jobs for California residents. Specifically, over the first five years, CIRM facilities grants and corresponding facilities and research matching spending are projected to generate a total of 13,727 job-years (one job-year=one job for one year) or 2,745 construction and research-related jobs on average per year. The breakdown of these jobs includes 11,393 facilities and equipment related job years, equivalent to 2,279 jobs per year for five years, and 2,334 new lab research-related job years, equivalent to 467 jobs per year for five years.

As noted, we understand that the facility and lab spending from donor and matching funds is for the facilities and researchers focused on CIRM-related activities. The research matching funds were not contemplated directly or including in the financial estimates in the original analyses. Because these matching funds represent new research activities, they will not have an offset for research activities that would have occurred anyway regardless of CIRM. If one were to assume that the new facility research did have an offset for alternative uses, as was estimated for the CIRM-related research funds, the estimated matching funds lab research-related job years to California would decrease from 2,334 job-years to 1,168 job-years. Even under this assumption, the estimate of total new job-years for facilities and equipment and initial lab research spending is more than 200 percent greater than the estimate provided in the original analyses.